

**NBSIR 76-1176**

# **Regional Seminar on OMNITAB II**

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David Hogben  
Sally T. Peavy

Institute for Basic Standards  
National Bureau of Standards  
Washington, D. C. 20234

Held May 12 - 25, 1976

The Seminar was conducted as a part of the program under the  
US/NBS/Agency for International Development PASA TA (CE)5-71

Prepared for  
**Agency for International Development**  
**Department of State**  
Washington, D. C. 20523



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December 1976



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**U.S. DEPARTMENT OF COMMERCE, Elliot L. Richardson, *Secretary***

**Edward O. Vetter, *Under Secretary***

**Dr. Betsy Ancker-Johnson, *Assistant Secretary for Science and Technology***

**NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Acting Director***



## REGIONAL SEMINAR ON OMNITAB II

by: David Hogben and Sally T. Peavy

National Bureau of Standards

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### 0. Summary.

When we arrived in La Paz, the CENACO (Centro Nacional de Computacion) computer was not being used. Before we left, it was being used extensively by thirty participants from five Latin American countries to solve real, important problems. The technology transfer of the OMNITAB II computing system was swift, inexpensive and effective. CENACO wanted our help and worked hard to make the Seminar successful. We, in turn, wanted to help them and worked very hard to make the Seminar effective. United in working towards a common goal, strong friendships developed which contributed greatly to increased good will between the United States and Latin America. CENACO expressed a strong desire to have us return in 8 to 12 months.

### 1. Introduction.

In November 1975, Ing. Basilio Plaza, General Manager of CENACO, visited NBS under the auspices of the leadership grant program of AID. Plaza was accompanied by David Bernheisel, USAID-Bolivia, to provide advice in technical areas. Using a terminal, David Hogben demonstrated the interactive use of a Spanish version of the OMNITAB II computing

system. It was Ing. Plaza's opinion that OMNITAB could be used very effectively in Bolivia.

After their return to Bolivia, Plaza and Bernheisel concluded that one of two areas in which NBS could provide meaningful assistance to CENACO was in the installation of the OMNITAB II computing system on the DEC-10 computer, which was then being purchased, and that Hogben should also conduct a seminar covering the techniques in using OMNITAB II. (The other area involved Paul Roth, ICST.) Bernheisel requested USAID support for CENACO, which was subsequently granted and our visit was arranged for May 12-25, 1976.

To minimize the amount of effort needed to implement OMNITAB in La Paz, a working version was developed on the NBS PDP-10 with the gracious cooperation of Marshall Abrams, 650.02, Mary L. Fitzgerald, 650.02, and Don Orser, 205.00. The work on the PDP-10 was hampered by a UNIVAC 1108 system failure which created errors in our OMNITAB file and a PDP-10 compiler error. These difficulties were eventually overcome and a fail safe magnetic tape was sent to CENACO. A fair amount of work went into preparing approximately 280-35 mm slides to enhance the effectiveness of the lectures.

## 2. US/AID Participation.

We very much appreciate the work of Steffen Peiser, Office of International Relations, in arranging funding for the Workshop and the action he took to make the Seminar Regional, which turned out to be far more important than we had realized.

David Bernheisel and his wife, Mary, were extremely gracious hosts during our stay in Bolivia. They were willing to help in any way possible and did far more than one could reasonably expect. Far from being insignificant, we very much appreciated their help in getting drinking water from the U.S. Embassy.

David Bernheisel maintained a low profile and kept in the background. But he was always at hand to resolve any difficulty. He represented the United States most admirably.

## 3. Implementation.

We arrived in La Paz on Tuesday evening, May 11. As we registered at the Hotel La Paz, we were warmly greeted by David Bernheisel, Bernardo Bullain, and Hilda Ocampo.

We started slowly, due in part, to attacks of sorroche (altitude sickness), but everybody gradually got into high gear. There was a

minor delay until the acceptance tests for the CENACO computer were completed on May 13. By Sunday evening everything was under control.

The tape was mounted and loaded successfully. The first 43 of 54 test problems ran without any difficulty. The last eleven tests, which used FORMAT instructions for input and output of data, could not be completed. Jose Perez, Digital Equipment Corporation (DEC), resident software analyst, finally located the difficulty. The problem was with the operating software system of the DEC-10 computer and not with OMNITAB.

We were using the current version of OMNITAB and consequently had a few minor problems because some parts had not been properly updated or checked out. However, these problems were easily and quickly corrected.

Sally Peavy and David Cressey, DEC, made test runs to see if problems would arise if two or more participants used the terminals at the same time. Everything went well. David Cressey and Jose Perez were extremely helpful in getting OMNITAB implemented at CENACO.

#### 4. Spanish Version.

David Hogben conferred at some length with Bernardo Bullain and all his assistants to review the Spanish vocabulary, bring it up to date and make whatever changes were necessary. On the first weekend we were able to make most of the changes with great help from David Cressey. A vocabulary list was prepared and distributed to all the participants at the beginning of the Seminar.

To the best of our knowledge, CENACO has the only scientific computing system in the world which allows people to use the computer easily and effectively by writing simple instructions in Spanish.

#### 5. Program.

We had planned to spend May 12-14 implementing OMNITAB and allow seven days on May 17-21 and May 24-25 for the formal Seminar.

Due to problems with the altitude and minor difficulties, the implementation of OMNITAB carried over to Saturday and Sunday, May 15-16.

As a result of a slight communication problem, the Workshop was only scheduled for May 17-21. At first we added two days (Saturday, 22 and Sunday, 23) for supplemental work. Later, the work session on Sunday, May 23 was replaced by an outing to Tiwanaku. A copy of the program is included in the appendix.

## 6. Formal Ceremonies.

(a) Monday morning was devoted to the Inauguration held in the lecture room. A great deal of effort went into making the lecture room magnificent. A colorful sign announcing the Seminar welcomed people at the information desk. A blackboard in the front of the lecture room, announced the Seminar in colored chalk. Flags of the participating countries adorned the head table. The thirty participants sat two to a table with their names engraved on plaques and with exceptionally fine portfolios engraved with USAID, NBS, and CENACO seals. The sides of the room were filled with guests, reporters, press photographers, and television cameramen.

Ing. Basilio Plaza gave the opening speech welcoming the participants and the Instructors. General Luis Gonzales, Minister of Industry and Commerce (substituting for the Minister of Finance) was the featured speaker. Copies of the speeches, including a list of the participants appear in the Appendix.

The speakers, the Instructors, David Bernheisel and two other USAID representatives and several high officials in the Bolivian government sat at the head table.

The Inauguration was highly publicized in the La Paz newspapers.

A reception followed the Inauguration. Bolivian cocktails were served with fine hors d'oeuvres, including pigeon eggs. David Hogben had a very pleasant conversation with the Minister of Commerce and Industry during which each expressed great pleasure in having the Seminar in La Paz.

(b) On Friday evening, May 21 a closing ceremony was held which was a memorable experience. Again, high government officials were present: the Assistant Minister of Finance, Ing. Plaza, Lt. Col. Ocampo and other CENACO officials. The participants were awarded certificates signed by David Hogben, Bernardo Bullain, and Basilio Plaza. Hogben and Peavy received certificates of appreciation. The foreign participants and the Instructors received Indian hand-carved wooden plaques with the signatures of the CENACO officials, the Instructors, and the foreign participants. Lt. Col. Ocampo presented each member of the NBS team with key rings of the General Command of the Bolivian Army. A photograph taken at the closing ceremony is shown on the next page. The press was again present. It was a very moving experience which brought tears to our eyes and even today brings a lump to our throats whenever we think of it. David Hogben spoke with Ing. Reynaldo Salgueiro, Systems Division, National Council of Higher Education, with whom there had been some correspondence, about the possibility of a visit to the



Ing. Plaza addresses Seminar

university. Unfortunately, a visit could not be squeezed into our busy schedule.

After the awards ceremony, we moved to one of the finest restaurants in La Paz for a reception and banquet. Again, very moving speeches were made by both the Bolivians and us expressing sincere pleasure with the great success of the Seminar. Four humorous musicians entertained and dedicated one musical story to David Hogben.

The Hogbens talked at length with Felipe Gusman Borckmann, Cochabamba; particularly with regard to international relations and the expected use of a PDP-11 at Cochabamba which will be hooked up to the CENACO DEC-10.

## 7. Lectures.

David Hogben lectured for about an hour and a half in the morning and for approximately two hours in the afternoons, starting on Monday afternoon, May 17. All lectures were excellently translated by Ing. Bernardo Bullain, CENACO, and on a few occasions, by Ing. Luis Garcia, Dominican Republic. (Hogben's opening remarks were in Spanish and a little Spanish was used once in a while during the lectures.)

Three screens were used for the lectures. The one on the extreme left was for an overhead projector which was used in answering questions and providing supplementary explanations. Two 35 mm projectors were used simultaneously for the basic lecturing. Most of the slides were used in pairs. For example, OMNITAB instructions to be explained appeared on a slide shown on the left and the results were shown in a simulated worksheet on a slide on the right. Approximately 280 slides were prepared for the Seminar. The slides showing actual computer output were clear on black. The other slides were made from clear on black transparencies with the clear portion colored appropriately in many cases. Frequently, matching colors were used to show instructions and results. The slides made the material covered very easy to understand and were appreciated greatly by the participants and translators. A photograph of Hogben lecturing is shown on the next page.

Hogben provided Bullain with two copies of the original black on clear transparencies used to make the slides. Bullain had the two sets bound with a cover and title for reference use by the participants.

Despite the necessary delays for translation, it was possible to cover most of the basic material in "OMNITAB II User's Manual," NBS Technical Note 552. The participants were clearly paying attention and frequently asked questions which showed that they were either with or



Dr. Hogben lectures to Seminar Participants

ahead of the lecturer. Many of the participants worked hard in the evenings to prepare for the lectures. Ing. Hernan Ojedo, Chile, came up with an extremely ingenious solution to a problem that had been given to the participants; a solution which neither Sally Peavy or David Hogben had considered.

Bernardo Bullain explained that even though some of the participants might not be able to follow everything in a lecture, the exposure to completely new ideas was very worthwhile. Moreover, the participants considered any lack of understanding a challenge and exerted extra effort to get as much out of the lectures as possible.

There was a long ovation at the conclusion of the last formal lecture.

On Saturday afternoon, May 22, a special lecture was given on the use of OMNITAB II to perform non linear least squares calculations. Although the topic was very specialized and advanced, many of the participants attended and appeared to fully comprehend the lecture. This lecture was followed by a discussion of the use of Fortran formats and a long question and answer session. Also, on Saturday afternoon, Sally Peavy answered several questions of Ing. Eduardo Toledo, Gerente de Compile, Lima, Peru, concerning the implementation of OMNITAB on other computers. She promised to, and did, mail further information to him.

Seven DEC terminals were wired to the DEC-10 computer. Each one was attended by a CENACO assistant who had been given special training for the Seminar. Three to four participants were assigned to each terminal. Sessions for the use of terminals, under the direction of Sally T. Peavy, began on Tuesday, May 18, and continued until Friday, May 21. The morning session lasted about an hour and the afternoon session, which started at 4:30 went to 6:30 and sometimes until 8:00.

Each participant eagerly took advantage of the opportunity to get lots of hands-on experience with the terminals. The terminals were virtually in continual use as long as the computer was operating. In fact, the terminal use was so great that the normal operating hours of the computer were extended. Sally Peavy is shown in the photograph on the next page explaining the use of a terminal to one of the participants.

The terminal room was adjacent to the lecture room and the participants lost no time in getting to the terminals.

A dozen problems prepared for the Seminar were translated into Spanish for each of the participants. They worked hard on both these



Mrs. Peavy oversees use of terminals

problems and problems of their own which they had been asked to bring to the Seminar.

Before we left La Paz, the participants were working on real problems. For example, data from tax returns were being analyzed according to source of income, projections of agricultural production were calculated for several commodities, and the flow of funds was being projected for a housing subsidy program.

Both Peavy and Hogben spent time answering questions and helping the participants. Sally Peavy took time to acquaint Sr. Gustavo Perez with the internal workings of the OMNITAB II system. She also talked to some of the CENACO assistants about specific OMNITAB topics not covered in the lectures, such as the use of instructions for creating data files, the use of data files, and the use of magnetic tapes.

#### 9. Informal Activity.

(a) Sunday, May 23, the foreign visitors and Sally T. Peavy went to visit the Tiwanaku pre-Inca ruins, 73 km from La Paz, with CENACO officials. During the day, Sr. Plaza and Mrs. Peavy discussed other software which might be useful to CENACO. Sr. Plaza was interested in sending some of his personnel to work at NBS at CENACO's expense. Mrs. Peavy asked Sr. Plaza to explore this possibility with Mr. Peiser.

(b) Monday, May 24, the Hogbens and approximately 20 participants and CENACO staff flew to the Bolivian General Command resort at Alto Beni in the Yungas for a day of rest and relaxation. It was an excellent opportunity for everyone to let their hair down and join in comradeship. A large recreation cabin, below the President's cabin, was used extensively for table tennis, chess, card games, etc.

In the afternoon, Hogben spent about an hour or so explaining to Bernardo Bullain how OMNITAB could be used to analyze complex designed experiments by using matrix operations to construct the design matrix and the FIT instruction to break out sums of squares for individual degrees of freedom.

In the evening, about an hour was taken out for a very significant ceremony. An international agreement to cooperate in the utilization of computers was signed by Ing. Basilio Plaza and participants from Chile, Peru, Colombia and the Dominican Republic. The agreement was not signed by Hogben, but Plaza felt that an implicit agreement already existed with NBS. Each signee and Hogben received an engraved plaque to symbolize the event. The plaque presented to Hogben was presented to Dr. E. Ambler, Acting Director, for NBS at a ceremony on June 11.

Although the signing has no legal significance, we believe it was very important and a direct result of the Seminar. Cooperation in the use of computers is often very difficult and it is gratifying to have found such a strong desire on the part of the participants to work together. Whether anything significant will come of this event remains to be seen, but at least the desire and intent was clearly demonstrated.

During the signing ceremony, frequent toasts were made. After the ceremony, we all returned to the much needed rest and relaxation.

#### 10. US - SA Relations.

We could not have been received in La Paz with more affection. We did our best to return the affection. Jean Hogben, wife of David Hogben, was an (unpaid) ambassador of good will par excellence. The South Americans fell in love with her and she with them. Strong friendships developed. There was an emotional scene at the Airport on Tuesday (May 25) evening when a delegation from CENACO greeted us and bid us fond farewell. A strong bond was established which we shall always treasure.

Our plane circled La Paz for some time and then took off for Lima without landing in La Paz. Thus, we had to spend an extra day in La Paz.

#### 11. Arrangements.

Ing. Bernardo Bullain was responsible for the day to day operation of the Seminar. He worked extremely hard and did an excellent job. Hilda Ocampo also contributed significantly to the smooth operation of the Seminar.

The physical arrangements for the lectures and the use of terminals were both very good. The view from the lecture room showing the snow capped Mt. Illimani, 6,462 m, left us breathless. We were well supplied with refreshments by very courteous and helpful ladies.

A brochure (attached) was prepared to describe the Seminar.

On the weekends the elevator did not operate and it was no mean feat to climb the 130 steps to the "5th floor" at an altitude of approximately 3,800 m. But, considering how well everything else went, it was easy to put up with this minor inconvenience.

After our first day in La Paz, a mini-bus with driver was at our disposal at all times. An OMNITAB II sign was put on the windshield. The sign became a symbol to the CENACO staff who became attached to it

and carried it everywhere. They displayed it, with pride, on the plane after we landed at Alto Beni and also at the Friday banquet.

## 12. Conclusions.

The Regional Workshop was extremely successful and worthwhile. CENACO now is using their computer effectively to solve important real problems for the first time. Currently, they are only using OMNITAB. No use is being made of traditional languages such as FORTRAN or COBOL.

Much was done to improve US-South American relations. We feel that the investment in time and money for the Workshop is quite possibly the best investment the U.S. has made in South America.

As a result of our efforts to implement OMNITAB in La Paz, we feel that the OMNITAB II computing system could well be used to supplement a computer acceptance testing program. The complexity of OMNITAB coupled with its reliability and documented set of test problems makes it extremely effective in quickly detecting computer or system problems.

The enthusiasm of the participants was most gratifying. Their concern for our welfare was very pleasing.

We believe the OMNITAB II computing system will be a very useful tool for CENACO and will be utilized extensively. They plan to give lectures on the use of OMNITAB II later on to a larger group of potential users. We feel that we adequately prepared them to assume this responsibility. A duplicate (but less precisely exposed) set of slides was left with them for use in their lectures.

## 13. Appendix.

### (a) Opening speech by Minister of Industry and Commerce.

In my capacity of acting minister of finance, it is my distinct pleasure to open the work of the Seminar on Applications of OMNITAB II, organized by the National Computer Center in cooperation with the National Bureau of Standards of the United States and by that nation's Agency for International Development.

This seminar constitutes an important scientific and technical milestone because in addition there are technicians representing our neighbor countries. The seminar's basic purpose is to equip the participants with a complete understanding of OMNITAB II through lectures given by recognized experts in the field. As you know, OMNITAB II is a computer programming package designed to provide further specialization in the use of computers to technicians, scientists and

experts in programming problems. The success of the seminar is guaranteed by the presence of highly qualified experts from the United States, such as Professor David Hogben, mathematician and statistician of the National Bureau of Standards, Mrs. Sally T. Peavy, mathematical analyst in the Engineering Laboratory of the Bureau of Standards, and engineer Bernardo Bullain, systems engineering expert, as well as other professors whose presence at the seminar promises beneficial results for the development of the information sciences in Bolivia.

Bearing in mind the importance which computers have acquired regarding scientific, technological and economic growth in developing nations, the Armed Forces Government sees this as a basic and important event for the training of Bolivian personnel.

My sincere wish is that the maximum success will crown the work of the seminar. I state my gratitude in the name of the government of Bolivia and of the finance minister, whom I have the honor of representing on this occasion, and for myself personally, for the important work of the distinguished professors participating in the workshop. I declare inaugurated the deliberations of the Seminar.

(b) Speech by Ing. Basilio Plaza.

It is a great pleasure for me to be speaking to you on this occasion which is given enormous importance by the presence of friends from other nations who are high-level experts in the information field and representatives of various Bolivian agencies.

As part of the dedicated efforts toward development on the part of the Supreme Armed Forces Government, headed by General Hugo Banzer Suarez, and in keeping with the national operations plan, CENACO (National Computer Center) is fully in step with this program and is carrying out all necessary action to work toward successful completion of these programs.

Accelerated development in the information field is now causing very important changes in science, technology and administration. The use of computers makes it possible to store huge amounts of data and to process, select and recover information rapidly. This information, presented in an intelligent and logical way, is extremely valuable because it allows executive authorities to be timely and correct in giving direction and making decisions.

The seminar, which now will be inaugurated by his Honor the Minister of Finance, is intended to provide understanding of a new method for facilitating the use of electronic data processing equipment in almost all fields of human knowledge, and the package which will be explained

during the seminar is the result of more than 10 years of continued work by expert specialists.

Speaking for the entire staff of the National Computer Center, I express our sincere gratitude to the authorities of the Supreme Government, the president and board members of CENACO, and especially to the National Bureau of Standards of the United States with headquarters in Washington and to the Bolivia office of the Agency for International Development, for having made this important event a living reality. The principal programs include arithmetical operations, polynomial calculus, ordering operations, matrix operations and more than 200 additional programs. Practice sessions will be held, allowing interaction with slow terminals.

This is a summary of the qualifications and professional backgrounds of the seminar's instructors. Their extensive resumes are the guarantee of the greatest success for this seminar.

Mr. David Hogben:

Ph.D. in mathematics and statistics, mathematician and statistician for the National Bureau of Standards, president of the training and statistics branch of the American Statistical Society, and published in several international journals in the information field.

Mrs. Sally T. Peavy:

Mathematical analyst in the Engineering Laboratory, graduate of the University of Wisconsin, graduate study at American University, in charge of maintaining and implementing the OMNITAB II program package, and co-author of various publications for the National Bureau of Standards.

The following is the list of participants:

Eduardo Toledo G., ENTELPERU (National Telecommunications Enterprise of Peru); Julio Zuniga, University of Chile; Hernan Ojeda, ECOM (expansion unknown), Chile; Luis Humberto Saenz, DANE (National Administrative Department of Statistics), Colombia; Dr. Luis Otero Calderon, Lung Institute; Alain Vidal, Altitude Biology; Tcnl. DEI (expansions unknown) Juan de Dios Monje, Army General Command; Maj. DIA (expansion unknown) Jorge Escobar, of the President's Economic Advisory Board; Gonzalo Loayza, Banco del Estado; Ma. Dolores de Cosulich, of the Bolivian Corporation for the Development of Mining and Petroleum; Nicanor Delgado, National Higher Education Council; Antonio Velarde, Institute for Physics Research; Roberto Callisaya, Bolivian Auditor General's office; Luis Cosulich, Ministry of Industry and Commerce;

Miguel Zelles, of the National Statistics Institute; Manuel Montecinos, COFADENA (Armed Forces National Development Corporation); Julian Justo Mendoza, of the Ministry of Defense; Daniel Rivas, of the General Integration Secretariat; Luis Noriega, from the Labor Ministry; Carlos Blanco, of the Finance Ministry; Dr. Guido Sagarnaga, of the College of Odontology; Maj Vicente Saavedra, of the Military Geography Institute; Gladys Viscarra, of the National Rent Office; Abel Martinez Carrasco, of National Railroads.

The basic goals of the Seminar are as follows:

1. Integration with Spanish-speaking nations and mutual collaboration through exchange of experiences.
2. Training of participants in interpretation and use of software packages.
3. Participation by representatives of Bolivia's most important agencies with the goal of providing them incentive to learn the benefits of automatic data processing methods and incentive to use them.

Thank you.

- (c) Newspaper Article in La Paz EL DIARIO in Spanish 18 May 76 p 3.  
(Translated into English)

#### BOLIVIA INTEGRATES WITH INTERNATIONAL COMPUTER SYSTEMS

(Text) Yesterday marked the inauguration of a seminar on Applications of OMNITAB II, intended as a means of integrating Bolivia with other Spanish-speaking nations, training professionals in the interpretation and use of software packages and spreading information on the origins of automatic data processing techniques.

This important event in the development of government within nations is sponsored by CENACO, the National Computer Center, and by USAID (Agency for International Development) for Bolivia and the U.S. National Bureau of Standards.

Yesterday morning an inauguration ceremony was held. In attendance were the industry minister, CENACO's general director, the Department prefect, and more than 25 participants, including representatives of Chile, Peru, Colombia, and the Dominican Republic.

In his opening speech, CENACO chief executive Tcnl. DIM (expansions unknown) Basilio Plaza noted the importance of the seminar and stated that accelerated development in the information field is now causing

the use of computers makes it possible to store huge amounts of data and to process, select and recover information rapidly.

Referring to the objectives of the seminar, he said that it aims to spread knowledge of a new technique for facilitating the use of electronic data processing equipment in almost all fields of human knowledge.

Plaza emphasized that the event, which is to conclude on 21 May, is of great importance because not only will it bring extensive training on computation and automatic data processing, but also because the instructors are prestigious experts with international reputations, including David Hogben, with a doctorate in mathematics and statistics and president of the training and statistics branch of the American Statistical Society, and Sally Peavy, a mathematical analyst in charge of maintaining and interpreting the OMNITAB II program package and coauthor of several publications for specialized international journals.

He noted also the role of engineer Bernardo Bullain, systems engineer for CENACO, technical coordinator for the seminar, a graduate of UMSA (expansion unknown), with a systems engineering degree from Budapest and specialized courses at the Academy of Sciences of Hungary and the International Science Center of Italy, along with five published scientific works.

#### Importance

Emphasizing the importance of the seminar on applications of OMNITAB II for programs of national development, Gen Victor Gonzalez, finance and industry minister, gave a speech for the occasion, noting that this technical and scientific event has the participation of distinguished professionals from Bolivia and abroad.

He pointed out that the seminar will provide our professionals with adequate training, since participants represent the most important sectors of the economic activity of the nation.

He highlighted the work of the National Computer Center because data processing programs and the use of modern computer systems are related to programs for national development.

#### (d) Workshop Program.

### SEMINAR ON APPLICATIONS OF OMNITAB II

17-21 May 1976

## CENACO DEC-10 System

Sponsors: CENACO, NBS (National Bureau of Standards), USAID La Paz, Bolivia

Monday 17	1000 hours	Inauguration of seminar, refreshments hosted by CENACO
	1400 to 1500 hours	Introduction
	1500 to 1515 hours	Break
	1515 to 1615 hours	What is OMNITAB II
	1615 to 1630 hours	Break
	1630 to 1800 hours	Basic Examples
Tuesday 18	0900 to 1000 hours	Feeding and Printing Data
	1000 to 1015 hours	Break
	1015 to 1115 hours	Arithmetical Operations
	1115 to 1200 hours	How to Use Terminals
	1200 to 1400 hours	Break
	1400 to 1500 hours	Data Processing I
	1500 to 1515 hours	Break
	1515 to 1615 hours	Data Processing II
	1615 to 1630 hours	Break
	1630 to 1800 hours	Use of Terminals
Wednesday 19	0900 to 1000 hours	Iterative Use of Instructions
	1000 to 1015 hours	Break
	1015 to 1115 hours	Ordering Operations
	1115 to 1200 hours	Use of Terminals
	1200 to 1400 hours	Break
	1400 to 1500 hours	Matrix Operations I
	1500 to 1515 hours	Break
	1515 to 1615 hours	Matrix Operations II
	1615 to 1630 hours	Break
	1630 to 1800 hours	Use of Terminals
Thursday 20	0900 to 1000 hours	Basic Statistical Analysis
	1000 to 1015 hours	Break
	1015 to 1115 hours	Statistical Analysis
	1115 to 1200 hours	Use of Terminals
	1200 to 1400 hours	Break
	1400 to 1500 hours	Regressions, curve plotting
	1500 to 1515 hours	Break
	1515 to 1615 hours	Analysis of Experimental Data
	1615 to 1630 hours	Break
	1630 to 1800 hours	Use of Terminals
Friday 21	0900 to 1000 hours	Probability and Correlation
	1000 to 1015 hours	Break

1015 to 1115 hours	Numerical Analysis I
1115 to 1200 hours	Use of Terminals
1200 to 1400 hours	Break
1400 to 1500 hours	Numerical Analysis II
1500 to 1515 hours	Break
1515 to 1615 hours	Special Printout Formats
1615 to 1630 hours	Break
1630 to 1800 hours	Use of Terminals

Time will be available on 24 and 25 May for extra sessions for discussion of special problems by a smaller group of participants interested in:

Introducing a new program for OMNITAB II

Resolution of especially difficult problems

Advanced OMNITAB II techniques.



# SEMINARIO SOBRE APLICACIONES DEL OMNITAB II



17 al 21 de Mayo de 1976  
LA PAZ - BOLIVIA

THE NATIONAL COMPUTER CENTER

"CENACO"

INVITES YOU TO PARTICIPATE IN

A SEMINAR ON "OMNITAB II"

A computer programming package for evaluating data in statistical and numerical analysis.

Scheduled for the week of 17-21 May 1976

Organized by CENACO in cooperation with the National Bureau of Standards of the United States and USAID (Agency for International Development).

Address: 5th Floor, MacDonald Building  
Corner Loayza and Ballivian  
Phones: 62250, 62239  
Hilda 55570, 55670

La Paz, Bolivia 1976

WELCOME!

Background

To the degree that the role of computers is gaining importance in the scientific, technological and economic life of nations, it is becoming more necessary to develop methods which will offer computer users better and more convenient access to computers.

In recent years various efforts have been made to facilitate use of electronic data processing equipment for scientists, engineers, physicians and so forth. The OMNITAB II programming package is the result of one of these efforts.

It was originated by Joseph Hilsenrath 10 years ago and subsequently improved by him and his colleagues of the National Bureau of Standards, culminating in the present version, known as "OMNITAB II."

The National Computer Center of Bolivia, hoping to assure that these efforts reach not only Bolivia but the entire region, is inviting delegates to the seminar from related agencies of other South American nations, as well as representatives of Bolivian agencies which do work

requiring the use of modern methods of evaluation and numerical or statistical analysis.

### Goal of the Seminar

The principal purpose of this scientific and technical event is to offer the Bolivian and foreign participants the opportunity to understand "OMNITAB II" through lectures and laboratory work on computer terminals.

Each participant should come equipped with information on adequate data concerning matters pertaining to his or her agency or project so that participants will be able to verify the usefulness of "OMNITAB II" for solving their problems.

### Schedule

The seminar will take place during the week between 17 and 21 May, with about seven hours daily of activities, divided into two sessions with lectures alternating with laboratory work, at which time the participants will have the opportunity to carry out their specific projects by using the terminals of the DEC-System 10 computer in an interactive fashion.

### Overall Description of the "OMNITAB II" Program Package for Data Processing in Statistical and Numerical Analysis

OMNITAB II is a computer programming package designed to streamline the work of specialized technicians, experts and scientists who are unfamiliar with programming. It is a package for general use and can be learned quickly. It can be used for simple and complex numerical or statistical analysis of problems which require the use of computers. Instructions for OMNITAB II are given in the form of simple and concise phrases which are easy to understand and facilitate the solving of problems which require advanced mathematical or statistical treatment.

These computer programs have been used with success in many government agencies, in U.S. and foreign universities and industries, and have been incorporated into computers by at least seven different computing equipment manufacturers at the present time.

OMNITAB II consists of the following principal program packages:

1. Arithmetical operations
2. Data processing
3. Statistical analysis
4. Numerical analysis

5. Polynomial calculus
6. Iteration procedures
7. Ordering operations
8. Matrix operations
9. Bessel functions

#### Seminar Instructors

The lectures and practice sessions on the CENACO DEC-System 10 computer terminals will be directed by:

David Hogben, statistical analyst of the Laboratory for Statistical Engineering of the National Bureau of Standards of the United States,

Sally T. Peavy, statistical analyst in the Laboratory for Statistical Engineering of the National Bureau of Standards of the United States, and

Bernardo Bullain, CENACO systems engineer, in charge of translation and technical coordination.

#### Training Materials

All seminar participants will receive an "OMNITAB II User's Reference Manual." In addition, participants from agencies with adequate computing equipment, upon request, will receive a tape copy of programs in which they are interested from the National Bureau of Standards.

Also copies will be distributed of the problems studied during the seminar which can be applied to different technical and scientific fields.

In addition, slide projectors will be used to ease understanding and explanation of the lectures.

#### Language

The lectures and practice sessions will be handled in English. CENACO will provide technical translation to Spanish. The "OMNITAB II" command instructions will be given in Spanish.

#### Organization

- A) Travel, tourism and transportation information

All correspondence and inquiries concerning reservations, plane schedules, tourist excursions, hotels or transportation in and outside the city should be directed to the following address:

"QUO VADIS" Travel Agency  
Eugenio Monroy V., director  
Ave. Mariscal Sta. Cruz 1351  
Edif. Litoral Telephone 63387, 50808

#### B) Medical attention

Medical care for the participants and their parties will be provided by:

Dr. Ramiro Jauregui, tel. 54153, 50753, 22762  
Dr. Hernando Valdez, tel. 41994, 83048

#### Participants

About 30 participants will attend the seminar, 10 from various South American nations and 20 from Bolivia.

This small number means that participants will be able to take better advantage of the interactive manner of working with the computer terminals and allows for a closer relationship between instructors and students.

#### Requirements

Participants must have the following qualifications: a university degree and knowledge of specific problems from their work centers, along with the ability to state them in a clear and succinct manner, if possible with data.

#### Application Forms

Interested persons should send the following form as soon as possible to this address: OMNITAB II Regional Seminar, CENACO, P.O. Box 5264, La Paz, Bolivia. Cable: CENACO

Application Form for Seminar on Applications of OMNITAB II, 17-21  
May 1976, La Paz, Bolivia

Please include me in the Seminar:

Name: (please specify title)

Position:

Agency:

Address:

The topic I shall present in the Seminar is:

- Includes data
- Does not include data

Signature:

Date:

#### Certificates

Participants who complete the requirements of the work of the Seminar will receive a certificate at the end of the course.

#### Program of Social Activities

Monday 17 May 1000 hours: Inauguration of the Seminar by General Director Tcnl. DIM (Expansions unknown) Basilio Plaza Martinez

Friday 21 May 1930 hours: Closing banquet and awarding of certificates

Saturday 22 May 930 hours: Foreign participants and Seminar instructors will visit a place of touristic significance

Sunday 23 May: Return to La Paz.

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16. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)  The authors visited La Paz, Bolivia, from May 11 to May 26 to conduct an AID Regional Seminar on applications of the OMNITAB II computing system. A Spanish, interactive version of OMNITAB II was implemented on the CENACO DEC-10 system computer. From May 17 to 22, lectures were given to thirty participants from five Latin American countries and sessions were held for the participants to gain experience in the use of OMNITAB II from terminals. At the beginning, the computer was not being used; at the end, OMNITAB II was being used extensively to solve important problems. An international agreement was signed by participants from the Latin American countries to cooperate in the utilization of computers.			
17. KEY WORDS (six to twelve entries; alphabetical order; capitalize only the first letter of the first key word unless a proper name; separated by semicolons) Acceptance tests; AID; Bolivia; CENACO; computing using Spanish; foreign relations; international agreement; lectures; OMNITAB II computing system; technology transfer; terminals.			
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